

What is claimed is:

1. A method of applying metal plating to a cylinder of an internal combustion engine, the method comprising filling the cylinder with a plating solution, and then permitting the plating solution to pass through and along the axial line of the cylinder, thereby permitting a layer of electroless plating to be deposited on an inner circumferential surface of the cylinder.
2. The method according to claim 1, wherein said cylinder is held in such a manner that the axial line of said cylinder having a through-hole formed on the head portion thereof is aligned parallel with the vertical line, and the plating solution is introduced from an opening provided at the bottom of the cylinder so as to fill the cylinder with the plating solution and then, permitted to flow out of the cylinder through the through-hole.
3. The method according to claim 1 or 2, wherein a predetermined quantity of the plating solution is introduced from a main tank into a subtank disposed over the cylinder and then, the plating solution is permitted to gravitationally drop into the cylinder from the subtank, thereby filling the cylinder with the plating solution, the plating solution being subsequently permitted to pass through the interior of the cylinder and to return to the main tank.
4. The method according to claim 1 or 2, wherein the plating solution stored in a tank is pumped up by means of a pump and directly introduced into the cylinder, thereby filling the cylinder with the plating solution, the plating solution being subsequently permitted to pass through the interior of the cylinder and to return to said main tank.
5. The method according to claim 1, wherein said electroless plating solution is formed of a nickel (Ni)-phosphorus (P)-boron (B)-based plating solution.
6. A plating apparatus which is designed to apply electroless plating to the inner

circumferential surface of a cylinder of internal combustion engine, the cylinder having a through-hole at the head portion thereof; wherein said plating apparatus comprises:

a clamping means for holding the cylinder in a predetermined posture;

a plating solution-introducing means for introducing a plating solution into the cylinder; and

a plating solution-circulating means for filling the interior of the cylinder with the plating solution introduced by the plating solution-introducing means while enabling the plating solution to pass through the interior of the cylinder at a predetermined flow rate.

7. The plating apparatus according to claim 6, wherein said clamping means is designed to hold the cylinder in such a manner that the axial line of the cylinder is aligned parallel with the vertical line.

8. The plating apparatus according to claim 6, wherein said plating solution-introducing means is provided with a subtank which is disposed over the cylinder and designed to temporarily store the plating solution.

9. The plating apparatus according to claim 6, wherein said plating solution-introducing means is provided with a pump for directly introducing the plating solution into the cylinder.

10. The plating apparatus according to claim 6, wherein said plating solution-circulating means comprises a flow rate-adjusting nozzle which is disposed so as to plug said through-hole.

11. The plating apparatus according to claim 9, wherein said plating solution-circulating means comprises a flow rate-adjusting valve which is designed to adjust the flow rate of the plating

solution which is being discharged out of the cylinder after passing through the interior of the cylinder.

12. The plating apparatus according to claim 6, further comprising a cap member for closing an outer opening of an inlet port formed in an inner circumferential surface or a piston-sliding surface of the cylinder and also with a cap member for closing an outer opening of an exhaust port formed in the inner circumferential surface of the cylinder.

13. The plating apparatus according to claim 12, wherein said cap members are respectively provided with a flow rate-adjusting hole for permitting the plating solution to flow out of the cylinder through the inlet port and/or exhaust port.

14. The plating apparatus according to claim 6, further comprising heating means for heating the cylinder as well as the plating solution up to a predetermined working temperature.